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ABSTRACT

Prenatal appointment keeping is an important predictor of birth outcomes, yet many pregnant adolescents miss an excessive number of appointments. Since effective strategies for increasing appointment keeping require costly staff time, methods to predict relative risk for noncompliance with appointments might help delineate a circumscribed population and reduce costs in promoting appointment keeping. This study tested two different methods for predicting pregnant teenagers at risk for failing to keep appointments for comprehensive prenatal care. Pregnant adolescents (N=63) completed psychological questionnaires assessing depression, social support and life events. They and their primary health care providers also completed the Perinatal Health Belief Scales (PHBS), measuring the respondent's perception of risk and need for services. After giving birth, adolescents completed a measure of health care satisfaction. Chart reviews provided data regarding birth weight, gestational age, Apgar scores and appointment keeping information. The results suggest that adolescents who failed to keep the most appointments were likely to have significantly lower levels of concern regarding their risks during pregnancy than their primary health care provider had. Adolescents were more likely to keep appointments if they expressed levels of concern on the PHBS that were similar to those of their health care provider. The psychological measures and PHBS when applied individually were not successful in predicting those with the greatest likelihood for nonadherence to appointments. (Author/NB)

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ABSTRACT

This study was designed to test two different methods for predicting pregnant teenagers at risk for failing to keep appointments for comprehensive prenatal care. Sixty-three pregnant adolescents completed psychological questionnaires assessing depression, social support and life events. They and their primary health care provider also completed the Perinatal Health Belief Scales (PHBS) measuring the respondent's perception of risk and need for services. Following birth, adolescents completed a measure of health care satisfaction. Chart reviews provided data regarding birth weight, gestational age, Apgar scores and appointment keeping information. The results suggest that adolescents who failed to keep the most appointments were likely to have significantly lower levels of concern regarding their risks during pregnancy than their primary health care provider. Adolescents were more likely to keep appointments if they expressed levels of concern on the PHBS that were similar to their health care provider. The psychological measures and PHBS when applied individually, were not successful in predicting those with the greatest likelihood for nonadherence to appointments.

KEY WORDS: Adolescent, pregnancy, appointment keeping, nonadherence, health beliefs, depression, support, life events

Based on the well documented salutary effect of prenatal care for pregnant teenagers, prenatal appointment keeping is an important predictor of birth outcome.[1-2] Adolescents are twice as likely as women in their twenties to complete their second trimester without prenatal care, and many teens who do seek prenatal care miss an excessive number of appointments.[3,4] A number of strategies for increasing appointment keeping have been found to be effective including telephone reminders,[5] letters,[6] and education aids.[7] Each of these interventions require costly staff time, particularly when applied to an entire clinic population. Consequently, methods to predict relative risk for noncompliance with appointments might help delineate a circumscribed population and potentially reduce overall costs in promoting appointment keeping.

Within the pregnant adolescent population, a number of factors may predispose to noncompliance with prenatal care appointment keeping. Available literature suggests two models of social psychological predictor variables: psychosocial risk factors and health beliefs/attitudes. The psychosocial risk factors most frequently cited in the literature for pregnant teenagers are: (1) depression,[8] (2) low social support[9,10] and (3) multiple life stressors.[11] This model suggests that pregnant adolescents who are depressed, lacking in social support, or overwhelmed with multiple life stressors are at higher risk for appointment noncompliance than their more well adjusted peers.

A second model, the Health Belief Model (HBM)[12] suggests that medical compliance can be predicted based on the patient's attitudes.

The HBM predicts greater compliance in patients who report feeling greater susceptibility to the risk of experiencing negative health outcomes. Consequently, teenagers who feel more vulnerable during their pregnancy and report higher risks and needs for themselves, should be more likely to keep their appointments for prenatal care when compared to teenagers who report less vulnerability/need.

A variation of this model was studied by Starfield et al.,[13] who reported improved follow-up when both the physician and the patient agreed on the nature and extent of the problem. Consequently, prenatal care appointment keeping might be predicted by the degree to which the patient and health care provider assess similar levels of risk/need with provider and patient disagreement being associated with greater noncompliance.

Our study was designed to test the following hypotheses: 1) higher levels of depression and life stressors in pregnant teenagers will be associated with poorer compliance with prenatal appointment keeping; 2) lower levels of social support will be associated with poorer compliance with prenatal care appointment keeping; 3) lower levels of perceived vulnerability/need by the teenager will be associated with poorer compliance with prenatal care appointment keeping and 4) lower levels of congruence between patient and health care provider ratings of risk/need will be associated with poorer compliance with prenatal care appointment keeping.

METHODS

Subjects: Sixty-three (63) pregnant teenagers were recruited from a teenage pregnancy clinic in a large county teaching hospital. Of the initial 78 successive girls contacted, 15 did not participate as they were: Unable to speak or write English well enough to complete the questionnaires (9), did not return the consent form or instruments (5), or were eliminated because of known psychologic problems (1). Post hoc t-test between the 63 participants and the 15 nonparticipants yielded nonsignificant differences for age, school grade, number of appointments kept, infant's birth weight, gestation age or Apgar scores.

The age of participants at delivery ranged from 12.6 to 17.9 with a mean of 15.9 years. Fifty-one percent (51%) were Hispanic, 25% Anglo, 16% Black and 8% native Americans. Ninety-eight percent (98%) were primiparae, 85% were from a lower socioeconomic family, and in 90% the pregnancy was unplanned. All participants granted consent to be research subjects in accordance with Human Investigation Procedures.

Procedure: At the first prenatal visit and after a complete history and physical, 78 consecutive patients were invited by the research study coordinator to participate in this study. On the return appointment, consent forms were returned to the research study coordinator. At the end of that visit the patients completed the The Children's Depression Inventory, The Adolescent Psychosocial Network Questionnaire, The Life Events Checklist and the Perinatal Health Belief Scales. The health care providers were also asked to fill out an Perinatal Health Belief Scales

and were kept blind from reviewing any of the patient completed questionnaires. One to two months after birth, during a home visit by the research coordinator, subjects completed the Perinatal Care Patient Satisfaction Questionnaire.

Patients who failed appointments were sent a form letter by the clinic asking them to call back for reappointment. Patients who failed to recontact the clinic received a call from the clinic social worker to determine the reason for the appointment failure and to offer a new appointment. Chart reviews were done to collect data on appointment keeping behavior, gestational age, birthweight and Apgar.

Instruments: The Children's Depression Inventory (CDI),[14] a 27 item multiple choice questionnaire covering symptoms of depression such as anhedonia, sleep and appetite disturbance was completed by all subjects. A response ranging from 0 to 2 in the direction of increasing problems is used for each item. As a modification of the Beck Depression Inventory, the CDI has been widely used for children ages 7 to 17 years, with acceptable levels of reliability and validity.[14]

Subjects also completed the Life Events Checklist (LEC).[15] This 46 item questionnaire requires respondents to record whether or not an event has occurred. For events experienced by respondents, they are asked to further rate its qualitative impact (good or bad), and the amount of effect it had (4 point scale, no effect to great effect). Negative life

change scores from this instrument correlate with doctor visits, reports of physical problems, personal problems, pregnancy and emotional disturbance.[16]

Participants completed The Adolescent Psychosocial Network Questionniare (APNQ).[17] The APNQ is designed to yield 5 measures of a social network: size, frequency of support, durability of relationships, emotional tone and multi-dimensionality (activities done with others). Satisfactory levels of reliability and validity have been reported.[17,18]

Teenagers also completed the Perinatal Health Belief Scales (PHBS). This questionnaire was developed to measure health belief attitudes towards pregnancy and delivery. It consists of 4 items regarding the teenager's concern vs. confidence in having a normal pregnancy, an easy delivery, a healthy baby and being a good mother (all rated on 5 point Likert scale). In addition, there were 16 items regarding particular available services (i.e., nutrition, housing, birth control, counseling, WIC, etc.) on which the teenagers responded on a 5 point extent of need scale (not needed at all to definitely needed). This scale was completed separately by the teenager and her health care provider (HCP).

One to two months after birth, subjects completed a Perinatal Care Patient Satisfaction Questionnaire (PCPSQ). This questionnaire was designed to rate their satisfaction (5 point scale, from very unsatisfied to very satisfied) with their health care providers and the hospital services received. Lastly, data were collected from the patient's chart regarding the number of appointments made, the number kept, the baby's birthweight, gestational age and Apgar scores.

Results

For the 63 subjects, the average number of appointments made was 11.2 (range 3-20). The average number of appointments kept was 9.2 (range 2-18). Eighty one percent (81%) of individual appointments were kept with a range from 50% to 100%.

Stepwise multiple regression analyses found that appointment keeping was not predicted by any psychosocial risk factor (see Table 1). Social support and negative life events were also unrelated. A trend suggesting greater appointment adherence for the more depressed patients approached, but failed to achieve statistical significance. Teen or HCP ratings on the PHBS did not predict appointment keeping. However, the agreement score between their ratings was a highly significant predictor. When the teen and HCP made relatively similar ratings of risk and need, more appointments were kept than when the patient and HCP had widely disparate ratings. Disagreement between teen and HCP was uniformly in the direction of an increased risk rating by HCP and lower levels of concern by the teen.

After birth ratings of patient satisfaction were also associated with the number of appointments kept. Greater appointment adherence was found for the more satisfied patients ($r = .43$ $p < .005$). The number of appointments kept was moderately correlated with the length of gestation ($r = .322$ $p < .01$).

Stepwise multiple regression analyses were computed for the patient satisfaction ratings (Table 2). The results suggested that satisfaction with the HCP was significantly related to the extent of agreement or

disagreement on the PHBS. Those teenagers who were in greatest agreement with their HCP regarding their risks and needs were more likely to be satisfied with their provider than those teens whose ratings disagreed with the provider ratings. The psychosocial risk factors of depression, social support and life stressors were not significantly related to patient satisfaction with their HCP.

Satisfaction with the hospital services received was predictable only by the depression score from the CDI (see Table 3). Patients who acknowledged more depression on their first visit were more satisfied with the help they received than were their less depressed counterparts. Other psychosocial risk factors and the attitudinal measures were not statistically related to hospital service satisfaction.

DISCUSSION

Our results suggest that the HBM effectively predicts prenatal appointment keeping rates among pregnant teenagers, and that psychosocial risk factors do not appear to be related to appointment keeping. Specifically, teenagers' appointment keeping rates varied systematically based on the extent of agreement or disagreement between the HCP and the teen regarding the latter's relative risks and needs. Our teenagers consistently rated themselves as having fewer needs and risks than did their HCP's. Because the risk/need ratings by the teen and the HCP failed to predict appointment keeping when applied singularly, the results obtained did not simply reflect lower ratings of need by HCP. It appears that the greater the disagreement, regardless of the relative

level of need/risk endorsed by the individual teen and health care provider, the more likely that nonadherence to appointments will occur. Our satisfaction with HCP ratings suggest that disagreements between the teen and HCP decreased patient satisfaction and appointment attendance. Teenagers may perceive the discrepancy between their relative lack of concern and their HCP's relative high concern, thus creating certain aversive elements in the interaction during prenatal visits which simultaneously reduced satisfaction and appointment keeping. Our finding is consistent with previous research which suggested that decreased patient-provider agreement relates to decreased satisfaction which in turn predicted a decrease in appointment adherence.[19,20]

Pragmatically, our study suggests a relatively cost efficient strategy for selecting pregnant teenagers who are at risk for nonadherence with prenatal appointments. If the PHBS shows a significant discrepancy between the teenager's and their HCP's rating, then strategies to improve adherence should be directed more aggressively toward those patients. Telephone reminders, letters, education, aid with transportation, and other motivation strategies could be selectively applied.

Our study suggests that further training for HCP's in prenatal clinics for teenagers might improve appointment keeping. Such training could focus on health education and physician-patient interaction skills.[21,22,23] Attitude change techniques such as role playing or giving a counter attitudinal argument (e.g., arguing against one's own position) may decrease the discrepancies in attitude and perception while

increasing patient satisfaction and appointment adherence.[24,25] Clinicans may need to be cautious about taking on parental, overly concerned roles in caring for pregnant teenagers and instead develop more collaborative working alliances.

Our results must be viewed within the context of the research design's limitations. While the sample size is moderate, the use of a single site rather than multi-sites raises the question of generalizability. In addition, the PHBS was developed specifically for our project and its psychometric properties are relatively unknown. Lastly, the majority of our patients were from a minority background and the effect of health attitudes among majority teenagers was undersampled.

With the current epidemic in teenage pregnancy, special prenatal clinics are needed to offer comprehensive prenatal care for teenagers, and equally as important the teenager will need to avail herself of these services. In order to deliver more acceptable and effective services, health care systems should account for the wide range of social and cognitive development found amongst pregnant teenagers. Adolescent prenatal services, that are directed toward assessing and selectively intervening to overcome the host of environmental (e.g., propinquity), social (e.g., social support, issues of confidentiality), financial (e.g., service costs), and psychological barriers (e.g., attitudes, planning abilities), will in the long run produce healthier teen mothers and babies. Our study suggests that an interpersonal process between the patient and HCP regarding the degree of shared attitudes is a dimension that may create or diminish patient appointment keeping. Additional studies in other populations, and selective interventions with high risk teenagers are warranted.

TABLE 1

Stepwise Multiple Regression Analysis Predicting Appointment Keeping (N = 63)

INDEPENDENT VARIABLES	SIMPLE r	F	SIGNIFICANCE
Depression (CD)	.25	3.05	NS
Life Stressors (LEC)	-.07	.26	NS
Social Support (APNQ)	.02	.02	NS
Teen Needs/Risks (PHBS-T)	.22	2.45	NS
HCP Needs/Risks (PHBS-H)	-.16	1.28	NS
Difference Score (PHBS-T - PHBS-H)	-.46	12.32	$p < .001$

TABLE 2

Stepwise Multiple Regression Analysis Predicting Patient Satisfaction with their Health Care Provider (N = 63)

INDEPENDENT VARIABLES	SIMPLE r	F	SIGNIFICANCE
Depression (CDI)	.18	1.51	NS
Life Stressors (LEC)	-.13	.77	NS
Social Support (APNQ)	-.21	2.03	NS
Teen Needs/Risks (PHBS-T)	.14	.90	NS
HCP Needs/Risks (PHBS-H)	-.08	.30	NS
Difference Score (PHBS-T - PHBS-H)	-.37	7.29	$p < .01$

TABLE 3

Stepwise Multiple Regression Analysis Predicting Patient Satisfaction with Medical Services Received (N = 63)

INDEPENDENT VARIABLES	SIMPLE r	F	SIGNIFICANCE
Depression (CDI)	.35	6.37	$p < .05$
Life Stressors (LEC)	-.16	1.18	NS
Social Support (APNQ)	-.09	.37	NS
Teen Needs/Risks (PHBS-T)	.03	.04	NS
HCP Needs/Risks (PHBS-H)	.01	.00	NS
Difference Score (PHBS-T - PHBS-H)	.05	.14	NS

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